D1 end

a cantilever with a cantilever first end and a cantilever second end, said cantilever first end being attached to said torsional beam, said cantilever second end supporting a mirror head,

a connector attached to said torsional beam, and

a counterweight attached to said connector.

2. The optical micro-electromechanical device of claim 1 wherein said counterweight has a set of apertures formed therein.

D2

3. (amended) The optical micro-electromechanical device of claim 2 wherein a region of said substrate under said counterweight is configured as an isolation region.

4. The optical micro-electromechanical device of claim 3 wherein said isolation region is doped to provide electrical isolation between said counterweight and said isolation region.

5. The optical micro-electromechanical device of claim 3 wherein said isolation region includes a deposited passivation surface.

6. The optical micro-electromechanical device of claim 3 wherein said isolation region includes a trench to facilitate spatial isolation between said isolation region and said counterweight.

D3

7. (amended) The optical micro-electromechanical device of claim 2 configured as a laser.

D4

12. (amended) A method of operating an optical micro-electromechanical device, said method comprising the steps of:

positioning a mirror assembly over a substrate such that said substrate and said mirror together form a Fabry-Perot cavity, said mirror assembly including a torsional beam attached to said substrate, a cantilever with a cantilever first end and a cantilever second end, said cantilever first end being attached to said torsional beam, said cantilever second end

supporting a mirror head, a connector attached to said torsional beam, and a counterweight attached to said connector; and

applying an electrical bias to said substrate so as to create an electrostatic attraction between said counterweight and said substrate, which causes said torsional beam to rotate and thereby re-position said mirror head.

13. The method of claim 12 wherein said applying step includes the step of applying said electrical bias to said substrate so as to re-position said mirror head to create a red-shift of filter wavelength.

14. The method of claim 12 wherein said applying step includes the step of applying said electrical bias to said substrate so as to re-position said mirror head to create a blue-shift of filter wavelength.

15. The method of claim 12 wherein said positioning and applying steps are performed such that said mirror assembly operates as a laser.

20. The method of claim 12 further comprising the step of isolating said counterweight from said substrate.

21. The method of claim 20 wherein said isolating step includes the step of electrically isolating said counterweight from said substrate.

22. The method of claim 21 wherein said isolating step includes the step of electrically isolating said counterweight from said substrate through doping.

23. The method of claim 21 wherein said isolating step includes the step of electrically isolating said counterweight from said substrate with a passivation surface.

24. The method of claim 21 wherein said isolating step includes the step of spatially isolating said counterweight from said substrate.

25. (amended) An optical micro-electromechanical device, comprising:

a substrate; and

a mirror assembly suspended above said substrate, said substrate and said mirror together forming a Fabry-Perot cavity, said mirror assembly including:

D5

a torsional beam attached to said substrate,

a cantilever with a cantilever first end and a cantilever second end, said cantilever first end being attached to said torsional beam, said cantilever second end supporting a mirror head, said cantilever having a first length measured from said cantilever first end to said cantilever second end,

a connector attached to said torsional beam, and

a counterweight with a counterweight first end and a counterweight second end, said counterweight first end being attached to said connector, said counterweight second end being suspended above the substrate, said counterweight having a second length measured from said counterweight first end to said counterweight second end, said second length being less than said first length.

26. The optical micro-electromechanical device of claim 25 wherein the mirror head comprises distributed Bragg reflectors.

27. The optical micro-electromechanical device of claim 25 wherein the substrate comprises distributed Bragg reflectors.

28. ~~29.~~ (amended) A method of operating an optical micro-electromechanical device, said method comprising the steps of:

D6

positioning a mirror assembly over a substrate such that said substrate and said mirror together form a Fabry-Perot cavity, said mirror assembly including:

a torsional beam attached to said substrate, a cantilever with a cantilever first end and a cantilever second end, said cantilever first end being attached to said torsional beam, said cantilever second end supporting a mirror head, said cantilever having a first length measured from said cantilever first end to said cantilever second end,

a connector attached to said torsional beam, and

a counterweight with a counterweight first end and a counterweight second end, said counterweight first end being attached to said connector, said counterweight second end being suspended above the substrate, said counterweight having a second length measured from said counterweight first end to said counterweight second end, said second length being less than said first length; and

applying an electrical bias to said substrate so as to create an electrostatic attraction between said counterweight and said substrate, which causes said torsional beam to rotate and thereby re-position said mirror head.